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The Newsletter of the Montana Natural Heritage Program

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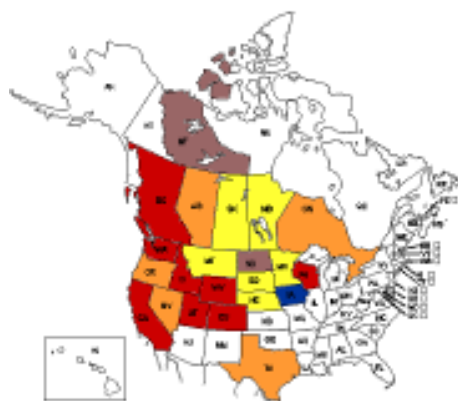
MONTANA PILOTS NEW RANKING METHODS

Our 2004 Animal Species of Concern report, completed in August, represented a big step forward in assessing the biological status of Montana species. This year we implemented a new ranking approach that brings a more rigorous application of criteria, consistent "scoring" methods, and better documentation of reasons and underlying data.

In Montana, Species of Concern are identified based on Natural Heritage status ranks, an internationally standardized system developed in the 1970's and now used by all 50 states, Canada, and 10 Latin American nations. Each species receives a global (G) rank, denoting rangewide status, and a state (S) rank denoting its status in Montana. Status ranks range from "1" (highest risk) to "5" (most secure). In general, Montana Species of Concern are those with a state rank of S1, S2, or S3.

These ranks are intended to reflect the **biological** status of species, based on available information and the expertise of field biologists. They are **not** legal or administrative designations, and are intended to help resource managers and others in setting priorities and making good decisions.

While Global ranks are assigned by NatureServe (our international affiliate organization), state ranks are the responsibility of local Heritage Programs. In Montana, Heritage biologists develop state ranks working closely with MFWP staff, as well as the Montana Chapter of the Wildlife Society, the Montana Chapter of the American Fisheries Society and other experts in government, academia and the private sector.



NatureServe Explorer provides color-coded status maps for each species and subspecies showing its status throughout North America. The above map is for American White Pelican.

State status ranks have always been based on several key factors – a species' range in the state, the number and size of populations, trends, threats and habitat vulnerability. While these basic criteria remain the same in the new ranking methods, they are being applied more rigorously and with much better documentation. We asked biologists with exper-

tise in various animal groups to score species on six specific criteria: population size, area of occupancy in Montana, short and long-term trends, threats, inherent vulnerability, and specificity to environment. These scores were then weighted and combined, a preliminary rank was calculated and circulated for review, and then final rank

The combination of global and state ranks helps distinguish a species' rarity/risk in Montana from its condition rangewide and can help guide planning. For example, the Mountain Plover's rank of G2 S2 indicates that Montana's populations make a significant contribution to this species' rangewide status. In contrast, the Blue-gray gnatcatcher, ranked G5 S1, occurs in Montana at the periphery of its much larger range, and the state supports a relatively small portion of its total population.

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adjustments were made. Detailed documentation of the criteria and assessment process are posted on the NHP website. This new assessment process was completed for all of Montana's amphibian, reptile and mammal species, and is partially complete for birds. The new methods have not yet been applied to fish or invertebrates.

The goal of this process, which was adapted from NatureServe (Master et al. 2003), is to improve the accuracy of ranks and better document the basis for each rank. Montana is the first Natural Heritage Program to apply these new methods, and Zoologist Paul Hendricks has been asked to participate in a NatureServe working group that will finalize this process for implementation throughout the heritage network.

We hope to begin using this approach for updating Plant Species of Concern ranks in 2005. We also plan to modify our Animal and Plant Field Guides so that users can access more information documenting species ranks. In the meanwhile, please contact us if you would like to obtain this information for any of the animal species that were evaluated.

For a detailed listing of Heritage Status Ranks and their definitions, and to find our latest Animal and Plant Species of Concern publications, please see our website at mtnhp.org.

Director's Scope:

- Sue Crispin

The Power of Networking

I recently attended a Leadership Conference that brought together managers from Natural Heritage Programs throughout the US, Canada, and Latin America. This year, we celebrated the 30th anniversary of the Network – an impressive milestone in the now fast-paced business of information management. It gave us pause to look back on the last three decades, share memories, and reflect on how much we've grown and changed.

When a few of us old-timers hired on (dating me ca. 1980), we were still entering data records on punch cards; while that soon changed, we continued to stick colored dots on paper maps well into the late 1990's. Many of our programs started out on a shoestring, with surplus furniture, donated maps, and newly-minted college graduates working in bull-pen offices. We're now a network of over 70 cooperating programs in 12 countries, staffed by over 800 professional scientists using modern GIS, GPS and Web technologies to help inform land management, economic development and conservation.

In one sense, the very existence of such an extensive network of independent, coordinated biological databases is astonishing – built one by one over 20+ years and still “singing off the same sheet

of music.” Perhaps the reason for this success was that the network got started before the technology explosion enabled each state to develop its own systems and solutions – resulting in “a thousand flowers blooming.”

Whatever the reason, the existence of such a large network of biological databases built on international standards and producing consistent, interpretable data offers huge advantages, especially as agencies seek information to manage species and ecosystems that span political boundaries. For example, wildlife agencies throughout the U.S. can draw on consistent natural heritage ranks to prioritize species in the Wildlife Conservation Strategies that are currently being developed. This “common denominator” will make it possible to “roll up” these plans into a comprehensive strategy that reflects both local and national priorities, and can be truly effective in conserving and managing America's precious natural heritage.

Of course, with any large, decentralized enterprise come challenges. Because the network is so diverse, with programs varying enormously in size, resources and technical capacity, implementing new methods and standards can be slow. The advantage of this diversity, however, is that different programs can take the lead in developing and testing new ideas. This

decentralized approach is efficient and also ensures that new methods focus on the needs of local programs and our end-users. For example, Montana's innovative work with web-based data dissemination and aquatic ecosystem information will help other heritage programs address these high-priority issues.

To help keep the network “glued together”, an organization called NatureServe was established in 1994 with the help of The Nature Conservancy. As our international affiliate, NatureServe provides global-level information on species and ecosystems and facilitates information-sharing among programs in the network. They also aggregate data from the entire network to provide “big picture” information on the status of species and ecosystems, and coordinate large-scale data compilation projects that focus on key species groups or regions. The recent Global Amphibian Assessment is a good example (available on www.NatureServe.org).

In future issues of this newsletter, we'll highlight activities of NatureServe and the network that relate to Montana, and share what's going on in sister programs of neighboring states and provinces – so stay tuned!

Staff News

We've added some great new talent to the Natural Heritage Program staff during



2004. Scott Mincemoyer joined us as Program Botanist in May. He had worked since 2001 as Botanist/Ecologist for USFS Fire Effects research in Missoula,

and is one of Montana's most accomplished and respected field botanists.

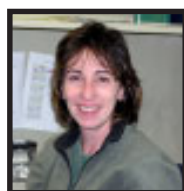
Karen Walker joined the staff in September as our new Biological Data Systems Coordinator, replacing Whitney Weber, who accepted a position with NatureServe. Karen came to us from the Chippewa National Forest in Minnesota, where she worked with NRIS and other USFS data-



bases. She holds degrees in Environmental Studies and Forestry.

Darlene Patzer joined us as Finance Assistant in July and has been promoted to Finance/Grants Administrator, taking over from Russ Fillner, who accepted the position of Fiscal Dean at Helena College of Technology. Darlene brings 13 years of experience as an accountant at the Federal Reserve Bank in Helena.

Also joining the Heritage staff in two short-term positions as Biological Information Specialist are Kathy Martin and Scott Blum. Kathy is a botanist who has worked in consulting, as well as for the US Fish & Wildlife Service



and NRCS. Scott recently completed his Master's degree in Ecology at Idaho State, and has worked as a research technician on several forest carnivore projects.

We're delighted to have all these folks on board as part of the Heritage team — Welcome!



Observations Wanted!!

Remember to send us any new observations/records for Montana Species of Concern, so we can update our databases. You can enter observations with our on-line Animal Observation Entry Form or download field forms from our website. Click “Submit Data” on our homepage:

mtnhp.org

THANKS!

Dillon Area Plant Surveys Yield Valuable Results

Southwestern Montana has a large number of globally rare plant species, including more endemics (plants unique to the area) than any other part of in the state. These include the Sapphire rock-cress (*Arabis fecunda*) and Beautiful bladderpod (*Lesquerella pulchella*) – both found only in Montana – and Alkali (or Idaho) primrose (*Primula alcalina*), Lemhi beardtongue (*Penstemon lembiensis*) and Bitterroot milkvetch (*Astragalus scaphoides*), which are narrowly restricted to southwest Montana and adjacent Idaho.



Beautiful bladderpod (*Lesquerella pulchella*)

The reasons for high plant diversity and endemism in this region lie primarily in its geologic and climatic history. Bedrock and soils are diverse, due to tectonic activity. In addition, lack of glaciation at low and mid-elevations, and the presence of numerous mountain ranges and valleys also contribute to the richness of species and habitats. However because of the sheer size, ruggedness and diversity of this region, there have been many gaps in our knowledge of its unique plants – especially just how rare or widespread they are and their habitat needs.

Many of these significant plants inhabit foothills and mid-elevation grasslands administered by the Bureau of Land Management. To help the BLM manage them effectively, the agency provided support for Heritage Program botanists to conduct inventory work that would clarify the status, distribution and habitats of 17 species of globally significant plants. Surveys were

conducted in the summers of 2002 and 2003, primarily by consulting botanist Peter Lesica, and focused on sixteen areas in Beaverhead and Madison counties, ranging in size from about 4000 acres (Rape Creek) to 30 square miles (Big Sheep Creek basin). These areas were selected because they included large tracts of BLM lands with good potential habitat and little or no previous botanical survey.

The inventories were highly successful, resulting in 48 new occurrence records for plant Species of Concern. Highlights included rediscovery of the Alkali (or Idaho) primrose, *Primula alcalina*, which had last been documented in Montana in 1936, and the discovery of a large population of Lemhi buckwheat (*Eriogonum soliceps*), recently described as new to science and previously known only from one small population in adjacent Idaho. Herbarium and field research also confirmed that Parry's fleabane (*Erigeron parryi*) is a distinct species found only in southwest Montana; surveys located five new populations on BLM lands.

Altogether, 26 new occurrences were documented for eleven globally significant (G1-G3) plant species. Three of these – Henderson's wafer-parsnip (*Cymopterus hendersonii*), Wind River draba (*Draba ventosa*), and Lemhi buckwheat (*Eriogonum soliceps*) – were discovered on BLM lands in Montana for the first time. In addition, five plant species of state significance (S1-S3) were documented on BLM lands in Montana for the first time: Small onion (*Allium parvum*), Low braya (*Brayahumilis*), Idaho fleabane (*Erigeron asperugineus*), Simple kobresia (*Kobresia simpliciuscula*) and Scallop-leaf lousewort (*Pedicularis crenulata* – the first record for Montana).

Based on this new information, state ranks for three species will be considered for downgrading to a "lower-risk" status. New habitat data that was gathered also helped create a clearer picture of where these plants grow and possible management options – see our Rare Plant Field Guide at mtnhp.org for detailed summaries of this information. Seven landscapes of particular significance for globally rare plant species were identified based on the presence of healthy populations (usually of multiple species) in high quality habitat. Detailed descriptions of these areas can be found in the project report, which is also available on our website (select "Reports" on our home page).



Poison Lakes in Johnson Gulch (Tendoy Range), provides habitat for 5 globally rare plants and is one of the highest-elevation fens in Montana.

Senior Zoologist Staffing

We're pleased to announce the hire of Bryce Maxell as Senior Zoologist for the Natural Heritage Program. Bryce will begin work on January 3 in our Helena office, and will be halftime through March, while he finishes his PhD dissertation. In addition to his expertise with amphibians and reptiles, Bryce has established a very successful amphibian inventory and monitoring program that will be continued through cooperation between MTNHP and the University of Montana.

We also want to take this opportunity to thank Leni Wilsmann, who has filled in as Acting Senior Zoologist since John Carlson left the position in January. Leni, who works for The Nature Conservancy (TNC) in Boulder, Colorado, has visited Helena for about one week each month, and has helped enormously with project management and tracking, staff coordination, planning, proposals, and data processing methods.

With 20 years' experience in the Heritage network, first as a zoologist, and later as program director and national coordinator, Leni was able to step in and lend immediate help. We appreciate her willingness to take on this "special duty" and the Conservancy's flexibility in allowing her to do so. Thanks Leni!



Current Projects

For a current list of Natural Heritage Program projects visit our website at

mtnhp.org/about/projects.htm

Birds-eye on the Prairie

From a distant birds-eye view, the prairie lands of Montana may appear uniform as they stretch from the Rocky Mountains to the Dakotas. A closer inspection reveals contrasts in vegetation structure (short grass vs. mixed-grass vs. areas with high sagebrush component) and obvious differences in topography and land uses. This variability provides habitat for a rich diversity of bird life. Many of the birds that nest and raise their young on our grasslands breed nowhere else but in the Northern Great Plains. These birds play an important role in the grassland ecosystems and have a complex and often not well understood relationship with one another and with other species of the prairie.

Although Montana has retained more intact grassland acreage than other prairie states, cropping (agricultural conversion), roads, and other developments fragment our grassland acres. Major and ongoing alterations of this ecosystem have earned grasslands the dubious distinction as one of the continent's most threatened major habitat types. Correspondingly, many of the species that define this unique landscape have responded negatively to these changes. The Breeding Bird Survey program (BBS), coordinated by the USGS Patuxent Wildlife Research Center over the past several decades, indicates that grassland bird populations show the most consistent declines of any group of birds monitored by BBS throughout North America. Reflecting this, sixteen of the sixty-one bird species identified as Montana Species of Concern are birds of the prairie.

Because of the concern for grassland species and the extent of good quality grassland that still exists in Montana, we have cooperated with several agencies and partners to document patterns of grassland bird diversity in the glaciated plains of south Phillips County, north Valley County, Blaine County, and the Rocky Mountain Front. Our method of inventorying in-

volves point counts — surveys at dawn to record all of the birds seen and heard at predetermined sampling locations. Although the primary focus is state Species of Concern, we gather information on all birds observed during these surveys.

Analysis of the data is not yet complete, but some basic patterns have already emerged. Our data reveal clear differences in prairie bird diversity between south Phillips County and north Valley County, and even among locations within north Valley County. For example, the northernmost survey area in Valley County has an abundance of Baird's Sparrow and McCown's Longspur, while the area just to the south supports Chestnut-collared Longspur and Brewer's Sparrow (but lacks the Baird's Sparrow and McCown's Longspur populations found just to the north).



McCown's Longspur (*Calcarius mccownii*)

Data from both Phillips County and the Rocky Mountain Front also appear to show some north to south differences in bird diversity, involving the four species mentioned above as well as several others. Subtle differences in vegetation may account for part of this apparent variation, but further work will be needed to identify limiting factors that may exist.

We are continuing the work in North Valley County and hope that it will help clarify these patterns. Studies focused on breeding success will be necessary to better understand the quality of these lands for sustaining prairie bird populations.

Our work has reinforced the need for on-the-ground inventory work; accurate assessment of these bird populations and their habitat dynamics will not be done from our office chairs. It seems, indeed, that the nature of our grasslands and the wildlife species found there are far more complex than they may appear from a distance.

Memorial Gift to Montana Libraries

The Montana State Library and The Nature Conservancy are offering a holiday gift to Montana Libraries. Thanks to a memorial fund established for former Heritage Program Zoologist, Jim Reichel, hundreds of libraries will receive a free copy of the new book, "Amphibians and Reptiles of Montana."

This handsome, color-illustrated field guide is dedicated to Jim Reichel, who died in 1997 while pursuing his passion for Montana's wild creatures. Jim was instrumental in creating the statewide amphibian and reptile database and developing the initial concept of a field guide to Montana herps. His colleagues and family felt that it would be a fitting tribute to place this book in libraries throughout the state, where it can enrich students of all ages and inspire future generations of biologists and wildlife enthusiasts. This will be but one more way in which Jim's wonderful legacy to Montana lives on.

New MTNHP Reports at

<http://mtnhp.org>

Conservation Status of *Botrychium lineare* (slender moonwort) in Montana.

A Plant Community Classification for Kootenai National Forest Peatlands.

Fire Ecology, Forest Dynamics, and Vegetation Distribution on Square Butte, Chouteau County, Montana.

Bats of the BLM Billings Field Office in South-central Montana, with Emphasis on the Pryor Mountains.

Using Vegetation to Assess Wetland Condition: a multimetric approach for temporarily and seasonally flooded depressional wetlands and herbaceous-dominated intermittent and ephemeral riverine wetlands in the northwestern glaciated plains ecoregion, Montana.

Ecologically Significant Wetlands in the Missouri Headwaters: Jefferson, Lower Madison, Lower Gallatin, and Upper Red Rock River Watersheds.

Need Data?

Requests can be submitted using the NRIS **Request Tracker**. Just click "Get Data" on our homepage: <http://mtnhp.org>. You can also call at 444-5354 or email directly at mtnhp@state.mt.us.

Montana's Aquatic Communities, from Mountains to Prairie

Natural Heritage databases have traditionally been focused more on terrestrial than aquatic resources. In Montana, our aquatic data collection and management has been limited to Species of Concern (mostly vertebrates and vascular plants) and, more recently, ecological information on wetlands. With the growing emphasis on management of water resources and aquatic systems, we felt a responsibility to better fulfill the aquatic portion of our statutory mandate for "information acquisition, storage and retrieval for data relating to the flora, fauna and biological community types of Montana."

We identified four primary needs to be addressed: 1) Assemble and integrate existing data on Montana's aquatic systems and biota (fish and invertebrates) from a variety of agencies and other sources; 2) Develop a classification framework that describes the diversity and distribution of aquatic communities in Montana and can be used in conjunction with spatial analysis (GIS) tools to predict and map stream types; 3) Describe the physical characteristics and biological composition of identified stream types ("reference conditions"); and 4) Identify aquatic habitats with significant resource value and those offering the best opportunities for management and restoration.

With support from the BLM and the Hewlett Foundation (through TNC), we began tackling this challenge in 2003. Our initial focus is on the aquatic communities of Montana's Missouri River Basin (including the Yellowstone drainage), focusing on fish and macroinvertebrates. These primarily lower-elevation and prairie streams have not been well documented but support some of the most intact fish and macroinvertebrate communities in the state. They are home to over half of the state's species of mayflies and caddisflies, and 75% of our fish diversity, including several Species of Concern, like the pearl dace and the sicklefin chub.

The first steps have included assembling more than 100,000 records from over 950 stream sampling sites into a single database. This database forms the biological information that will be linked with environmental data to develop the aquatic classification. Environmental factors that distinguish stream and river types include landforms, local geology, stream flow permanence, size hydrologic regime, drainage network position, local geomorphology, link number upstream and gradient. We are using a hierarchical classification approach, so that factors with the greatest influence over ecological processes at various scales can be emphasized. For example, geology is a defining influence at a broad scale while stream flow permanence will be critical at a small scale.

The fish and macroinvertebrate database will be statistically analyzed to identify

watersheds are expected this winter and a draft classification for the entire watershed is targeted for next spring. An interim report is available on our website, mtnhp.org.

Having an accurate classification system will make it possible to identify stream and river units that have similar characteristics and responses for management and restoration. It will also be valuable for assessing the quality of aquatic habitats and improving our understanding of Montana's aquatic ecosystems.

Applications of the aquatic database and classification system include:

- Defining reference conditions for aquatic community types, as a yardstick for bioassessment by DEQ and others.
- Helping fisheries biologists and range managers evaluate riparian condition on range lands.
- Identifying priority areas for management and restoration of native species and habitats;
- Predicting the location of habitat for fish Species of Concern to make inventory efforts more efficient.
- A "field guide" for anglers and the public to identify the insect and fish communities expected in different areas.

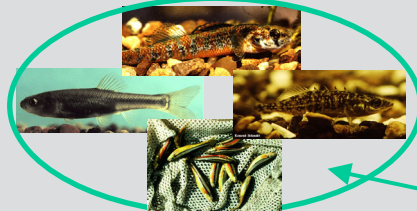
When fully developed, the aquatic database and classifica-

tion system will provide essential information about the biological resources of Montana's waters — some of our most valuable and vulnerable natural assets.

If you have questions or would like more information, contact Aquatic Ecologist Dave Stagliano at dstagliano@mt.gov.

Small, Low Gradient, Prairie Stream Fish Community

An example of an aquatic biological community is the "small, low gradient, prairie stream fish community." It is dominated by small native stream fish species that primarily occur in the Missouri River drainages in the Northern Glaciated region of the state. Indicator species include: Northern Redbelly Dace, Pearl Dace, Brook Stickleback, Iowa Darter and Fathead Minnow.



clusters of species that naturally occur together. While some of these organisms may be generalists that occur in a broad range of conditions, many will form repeatable biological communities that occur in certain habitats. Further analysis can determine which species may correspond to certain environmental conditions (or disturbances) as well as those that serve as the best indicators of various aquatic community types.

We are now testing this approach in four pilot watersheds across the basin. The draft environmental classification has been built and tested with fish data. Analysis is now underway with the much larger macroinvertebrate data set. Final results for the pilot

Did You Know?

The Montana Natural Heritage Program is one of only two Natural Heritage Programs in the United States with an Aquatic Ecosystem initiative — the Pennsylvania Natural Heritage Program is the other.



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Publications of Note

Amphibians and Reptiles of Montana. Werner, J.K., B.A. Maxell, P. Hendricks and D.L. Flath. 2004. Mountain Press Publishing Co.

Just released, this is a comprehensive field guide covering 37 species, with excellent color photos, range maps and detailed descriptions.

A Guide to Common Freshwater Invertebrates of North America. J.R. Voshell, Jr. 2004.

Provides good information in easy-to-understand, nontechnical language with great photos and drawings for most groups of invertebrates found in streams, lakes and ponds.

Biology, Ecology, and Management of *Elaeagnus Angustifolia* L. (Russian Olive) in Western North America. Gabrielle Katz and Patrick Shafroth. Wetlands Dec. 2003. pp.763-777.

Offers a comprehensive review of one of our most ecologically significant invasive species. If you haven't seen it yet, take a look.

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